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Sustainable Utilization and Conservation through Compensation for Ecosystem Services: Experiences from the Koga Watershed in Northern Ethiopia

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Abstract: Payments for ecosystem services have recently been introduced into the ecosystem management landscape to counter ecosystem degradation. This study examines the experiences of sustainable use and management of watersheds using a compensation for ecosystem service model in the Koga watershed, Northern Ethiopia. The study primarily employed qualitative methods. Thirteen informants, chosen from a group of project implementers, were contacted for telephone interviews, and a document analysis was also conducted. Thematic approaches were employed to analysis the data. The study findings revealed that a project had been introduced to implement an innovative payment/compensation for ecosystem services (CES) scheme to manage watersheds and to alleviate poverty in the watershed. The scheme connected upstream and downstream communities and cooperatives through CES, earning praise for its effectiveness in combating dam siltation and watershed degradation. The initiative also established various enabling conditions, such as capacity building, bylaw formulation, and payment procedures for beneficiary communities. However, the CES scheme still has a long way to go to deliver the anticipated positive impacts on local livelihoods and watershed management. It is believed that a comprehensive legal framework, a stable political and social environment, and sustainable financing mechanisms are crucial for the success of any CES project. Therefore, Ethiopia should strive to meet these requirements to ensure that any future CES projects are designed and implemented sustainably.

Keywords: payments for ecosystem services; Ethiopia; innovations; watershed; resilience building

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1. Introduction

Habitat loss and fragmentation, overexploitation, pollution, invasive species, and climate change have been and remain the main threats to global ecosystems and their services [1,2]. These environmental threats have increased adverse ecological consequences across the globe. According to an MEA [1] report, about 60 percent of the Earth's ecosystem services have been depleted at rates faster than they can recover. Most planetary boundaries, —climate change, biosphere integrity (genetic diversity), land system change, biogeochemical flows (N and P), freshwater change, and novel entities—that is, the environmental limits within which humanity can safely operate, have already been surpassed, and this requires immediate action [3,4].

Ethiopia has had a long history of human habitation and related human footprints on the biophysical environment. Rudimentary agriculture has been practiced in the northern highlands of Ethiopia since the third or fourth millennia BC [5,6], and these have significantly influenced the biophysical environment of the country [7–10]. A large proportion

of the country has already experienced severe environmental degradation. The recent interplays between land-use pressure and climate change have also exacerbated the extent of the problems in many parts of the country. The country has initiated and constructed various soil and water conservation measures and afforestation programs over the years with the support of various agencies [11–13]. Despite all these efforts, the results have been or remain unsatisfactory due to inadequate local community involvement, low technology adoption owing to technological incompatibility with resource-poor smallholder farmers [14,15], and/or the possibility that these technologies are site-specific and depend on the biophysical and socioeconomic environment [13,16].

Addressing these pervasive environmental problems has proven difficult using conventional natural resource management strategies like command-and-control and conservation approaches [17–19]. Environmental incentive schemes, such as payments or compensation for environmental or ecosystem services (CES), have recently been introduced into the ecosystem management landscape to address these environmental problems [18,20,21]. This scheme often aims to reduce poverty and enhance environmental management by compensating land-use decisions that enhance or at least maintain the essential ecosystem services [22–24]. The CES system is commonly run by either the public or private sectors, or both, and is expected to increase the engagement of resource managers and users simultaneously.

Despite the CES technical implementation critiques [20,25], many CES projects are currently being implemented in different parts of the world with due emphasis on biodiversity conservation, watershed services, carbon sequestration, and landscape beauty [19,22,26–28]. Watershed service payment schemes are used to promote upstream land management practices to improve the amount and quality of water that is available to downstream customers [29]. It is a scheme that is meant to improve water quantity (during the dry season) and water quality and to mitigate flooding. The introduction of market mechanisms for compensating upstream land managers and owners to maintain or modify a specific land use has been prompted by the failure of conventional soil-conservation-technique-based watershed management schemes [25,29,30].

Recently, Ethiopia has initiated various CES schemes like watershed management, carbon sequestration, and biodiversity conservation in different parts of the country. An example is the UNDP-implemented CES project from 2015 to 2019 to mainstream incentives for biodiversity conservation in Ethiopia's four unique biodiversity hotspots [31]—Diga Forest (SNNP), Choke Mountain (Amhara), Hadew (Somalia), Arjo Diga Forest (Oromia), and Hadew (Somalia). Another example is the Oromia Forested Landscape Program (OFLP), which is presently being implemented and which is financed by the World Bank [32]. OFLP is a World Bank Bio-Carbon Fund project that was started in 2017 to promote equitable and low-carbon development in the Oromia National Regional State by lowering land-use based emissions and raising forest carbon stocks. The program is in the form of results-based payments for verified emission reductions and an increase in carbon sequestration through forest preservation and other environmentally friendly land uses. To support such projects in the future, Ethiopia is actively developing legal and institutional frameworks for ecosystem service payment schemes.

In the Koga watershed of Northern Ethiopia, like in other parts of the country, the greatest barrier to development has been and remains land degradation problems. In the study watershed, the Koga reservoir has been experiencing a decline in water quantity and quality owing to sedimentation from the surrounding catchments, which may reduce the lifespan of this structure, upon which many farmers are dependent for irrigation [33,34]. Both the watershed and Koga reservoir degradation require an innovative approach that reduces reservoir sedimentation and improves land management and productivity in the area. To address these challenges, the Sustainable Utilization and Conservation through Compensation for Ecosystem Services (SUCCESS) initiative was implemented in the Koga watershed. In this regard, establishing a compensation mechanism (a payment for ecosys-

tem services) between upstream land managers and downstream Koga irrigation water users was expected to improve watershed management and community livelihoods.

Therefore, this study aimed to assess and identify the best practices and lessons learned from the SUCCESS project, as well as to investigate the possibility of expanding the innovation into other areas to strengthen community resilience against poverty and watershed degradation. The effectiveness, efficiency, and relevance of the innovation's action were also evaluated in the study.

2. Conceptual Background

Nature provides multifunctional services (ecosystem services) to humanity. Both nature and nature's contributions to people are vital for human existence and good quality of life [1,35]. According to MEA [1], ecosystem services can be categorized into four groups: provisioning (such as food, wood and fiber, water, and fuel), regulating (such as climate regulation, flood management, and water filtration), cultural (esthetic, recreational, and educational), and supporting (such as the nutrient cycle, soil formation, and habitat provision for biodiversity). They are the direct and indirect contributions of ecosystems to human wellbeing and quality of life. Ecosystem services can be localized, but they can also have national or even global importance. These ecosystem services, however, are vulnerable to degradation and loss in the absence of effective ecosystem management. The previous conservation strategies employed to conserve and restore damaged ecosystems had little effect in turning the problem around [28]. Instead of addressing the cause of the deterioration processes, efforts concentrated on addressing symptoms and their effects.

Over the past 30 years or so, the idea of using compensation or payment for ecosystem services to encourage sustainable ecosystem and watershed management has progressed from economic theory through policy discussion to actual implementation [19,22,27,28]. The CES scheme is a market-based approach for integrating the benefits of natural capital by developing a market for ecosystem services that involves users of ecosystem services paying for the benefits they obtain from the managed or maintained ecosystem services [19,21,22]. In this strategy, the beneficiaries of ecosystem services are expected to offer some sort of compensation/payment to the ecosystem service providers and managers. It is a market-based modality where buyers and sellers engage and collaborate to maintain ecosystem services through compensation mechanisms [22,27]. This compensation-based strategy, among others, encourages the development of a fresh source of funding for ecosystem conservation that will protect essential ecosystem services. In this regard, efforts are underway to create markets for access to clean water, biodiversity conservation, and the maintenance of beautiful landscapes, preserving soil fertility, and carbon sequestration. Likewise, considerable effort has been made to move payments for watershed services from theory to practice [25].

3. Research Methodology

3.1. Description of the Study Area

The study was conducted in the North and South Mecha districts of the West Gojjam Zone of the Amhara region, Northern Ethiopia, where the SUCCESS project was implemented. Specifically, the project was implemented in five selected pilot micro-watersheds, namely Asanat, Zebant, Upper Chefe, Lower Chefe, and Kurkurit, distributed in the two mentioned districts (Figure 1). The study area is characterized by flat-lying topography with some hilly terrain and is located about 35 kilometers southwest of Bahir Dar city. The slope varies from practically flat to extremely steep, and the altitude ranges from 1885 to 3131 m above sea level [36]. The average monthly temperature in the area is estimated to be around 25.8 °C, while the mean annual rainfall for the watershed ranges from 1247 to 1846 mm, with an annual mean rainfall of 1475 mm [33].

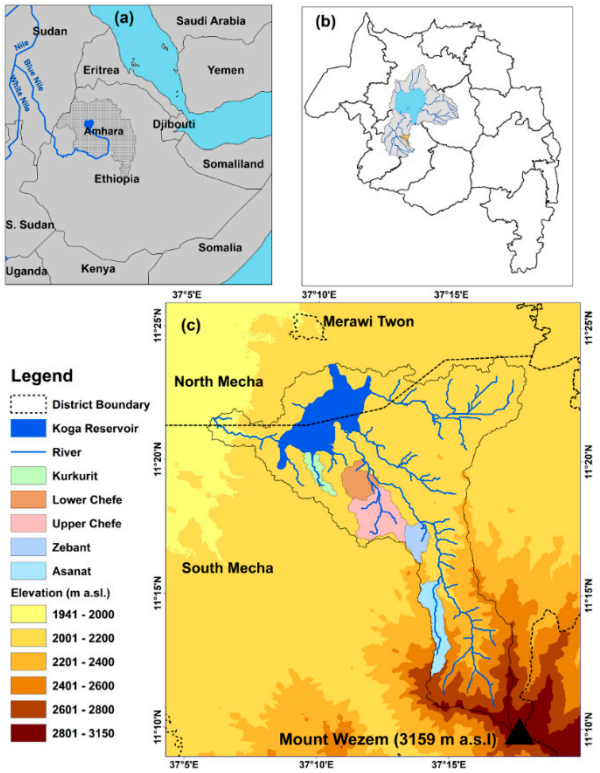


Figure 1. Map of Ethiopia showing the location of the Koga watershed and project micro-watersheds in the Amhara region: (**a**) map of the partial view of the Horn of Africa and the Gulf, (**b**) Map of the Amhara Regional State in Ethiopia and (**c**) Koga watershed (study area) [33].

About 85% of the population in the area is engaged in agriculture; the main crops grown in the area include maize, *teff*, barley, wheat, and other grains [37]. Livestock husbandry is also an important source of livelihood in the area. Eucalyptus plantations provide one of the major cash crops in the area [38]. One of the large-scale dams in the study districts is the Koga dam, which has an irrigation capacity of 7000 hectares. However, recent studies have revealed that the average annual sediment yield in the watershed ranges between 24 and 50 tons per hectare per year [39] and that the sediment load has already exceeded the reservoir's normal design expectations [33,34].

According to Abebe and Lemma [33], the major land-use and land cover types in the study area encompass cropland (77.5%), forest (6.7%), water bodies (5.2%), grassland (3.8%), bushland (3.4%), wetlands (3.1%), and built-up areas (0.3%).

3.2. Project Context

The Resilience through Enhanced adaptability, Strength, Equality and Transformation (RESET) Plus Innovation Fund, an initiative of the European Union (EU) and the Ethiopian government, has recently implemented various innovation-driven development projects in different parts of Ethiopia. The objective of the EU RESET innovative program was to foster social innovation that builds resilience among the targeted beneficiary communities. One of the many EU RESET innovation actions implemented in Ethiopia was the "Sustainable Utilization and Conservation through Compensation for Ecosystem Services (SUCCESS)" project. Since September 2022, the project has been implemented in the Koga watershed in the South and North Mecha districts of the West Gojjam Zone of the Amhara region in Northern Ethiopia. This project aimed to encourage the better use and conservation of ecosystems by introducing a financing tool known as compensation for environmental services and connecting upper and lower watershed communities via the scheme, lowering the cost barriers to increased implementation of integrated land management and improving rural livelihoods while also extending the life of the Koga irrigation dam.

3.3. Data Collection and Analysis

Data were primarily collected using qualitative methods. Telephone interviews and document analysis were the primary qualitative techniques used to gather the data. Owing to security concerns in the study area, face-to-face interviews with informants were not possible, so telephone interviews were used instead. Recently, telephone interviews have become one of the most common survey methods for qualitative data collection owing to advancements in technology and social change [40–42]. Telephone interviews have been observed to be shorter and less expensive, provide access to persons who live in unsafe regions or who are geographically remote, display less interviewer bias, and provide more attentive information than face-to-face interviews [41]. The telephone interview is reported to be accurate within acceptable error for qualitative research studies [41,43].

Thirteen informants, chosen from a group of project implementers, were contacted for telephone interviews. The study respondents were systematically selected from different organizations involved in the project's implementation, including HELEVETAS, the Department of Agriculture, the Environment and Forest Conservation, Water and Energy, the Cooperatives Agency, Women and Youth, and the Abay Basin Administration Office. Therefore, respondents were representatives of the relevant stakeholders who were involved in the project's design and implementation. The study questionnaires were crafted to address project implementation patterns and outcomes. The questions focused on how the innovation activity was implemented differently, the level of synergy and cooperation among stakeholders, appraisal of success indicators (effectiveness, efficiency, relevance, sustainability, and scalability), challenges, and lessons learned from the initiative. Additionally, a document analysis was carried out using project reports and published and unpublished data linked to the CES. Thematic analysis and informants' narratives were employed to analyze the data.

In this study, the validity of the analysis was tested using a triangulation technique and a stakeholders' validation workshop. Initially, the interviews and document analyses were compared to ensure the validity of the findings. Additionally, a stakeholders' validation workshop was organized, where several stakeholders participated and confirmed the validity of the study findings.

3.4. Main Activities Implemented by the Project

The present study findings revealed that the SUCCESS project has been under implementation in the Koga watershed since September 2022. According to the KII and backed by the quarterly implementation reports on the project (2023), the project has implemented various activities in the watershed that include awareness raising, capacity building, and knowledge generation.

For identifying and designing payment for watershed services, baseline information pertaining to the biophysical, social, and institutional elements of the watershed is essential. In this regard, a baseline survey was carried out for the project, and a baseline report for the five micro-watersheds under consideration was produced. The project initially signed a collaborative agreement with the various stakeholders and then conducted various consultation workshops and discussions and popularized the innovation's goals and concepts with the stakeholders and beneficiaries. Furthermore, an ecosystem service payment scheme modality was initiated with a binding agreement between the upper and lower watershed communities. Simultaneously, awareness-raising efforts regarding the idea of compensation for watershed services and the importance of preserving and protecting natural resources in the watershed were carried out. The project also identified five pilot micro-watersheds and hotspots where the innovation is to be implemented. After the establishment of pilot micro-watershed committees, every effort was made to transform watershed committees into cooperatives and to legalize the cooperatives. Technical and steering committees were also established at various levels to enhance effective implementation.

The study findings further highlighted the multiple capacity-building initiatives undertaken to create an enabling environment for the implementation of the project. The project built and strengthened the capacity of district cooperative staff, the five pilot micro-watershed committees and cooperatives, and zonal and district steering and technical committees. Village and micro-watershed committees and cooperatives, development agents, and technical experts were all given training on the concept of compensation for ecosystem services, gully rehabilitation, and area enclosures (of which about 38% were women). The project also provided various equipment (e.g., pickaxes, shovels, hummers, digging bars, and water levels) for five pilot micro-watersheds to facilitate effect implementation of the project. The project also facilitated the process of upgrading five micro-watershed committees to the level of watershed cooperatives and their accreditation. The project also supported the development of watershed committees and cooperative bylaws.

However, these initial capacity-building efforts may not be sufficient to sustain the scheme. Additional efforts may be required in areas such as financial management, dispute resolution processes, monitoring and evaluation, and livelihood diversification techniques to enhance sustainability of the initiative.

The process of purchasing an automatic weather station and a river gauging station has started, and suppliers have already supplied quotations. These weather station instruments, once processed and installed, will facilitate long-term weather database generation and monitoring in the watershed for years to come. As part of the information generation and dissemination efforts, the project updated and distributed fact sheets.

4. Results and Discussion

4.1. System Established for Resilience Building

The present study findings revealed that the project has introduced an innovative action–financing method for watershed management services in the context of irrigation dams and watershed management institutions, enhancing ecosystem health and farming communities for resilience building in the study area. This payment scheme or system implemented in the Koga watershed is not new, but it is an attempt to spread an existing system and to reach more communities and sites to build resilience against watershed degradation and improve ecosystem productivity or livelihoods in the area. The project has networked the upper and downstream watershed cooperatives through a compensation mechanism that makes it different from other past innovation actions in the area, according to the study participants. According to the study discussants, what makes this initiative unique is that the watershed cooperatives (upper and lower watershed) themselves become the proprietors of the project. Before the project was initiated, the lower watershed irrigation cooperatives were unaware of the activities of the upper watershed cooperatives and their impacts. Now, the lower watershed irrigation cooperatives believe that their irrigation activities and the Koga dam can be either positively or negatively impacted by the actions of the upper watershed cooperatives. Thus, the two cooperatives (lower and upper) have signed an agreement and developed bylaws whereby the lower watershed cooperatives compensate the upper watershed cooperatives for their work in the upper watershed management endeavor. By the same token, the project inputs are expected to enhance and support the sustainability of the existing community structures, such as watershed management committees, at both upstream and downstream levels. A similar argument was stated by one of informants as shown below:

> The scheme organized communities into watershed management cooperative associations with legal entities. This marks a complete transition from small groups to well-organized cooperative associations. Additionally, a binding agreement has been established as an ecosystem service payment system between upper and lower watershed cooperatives. Upper-watershed cooperatives provide labor to conserve the natural environment, while lower-watershed cooperatives are expected to pay for these ecosystem services as compensation. (KII Regional Cooperative Expert)

Payments for environmental services have today evolved into an innovative domestic finance strategy for biodiversity preservation, carbon sequestration, watershed management, and the like in many countries around the world [19,26–28]. Ecosystem service payment schemes entail payments to landowners or natural resource managers in exchange for the delivery of specific ecosystem services over and above what would otherwise be delivered in the absence of payment [19,22,23,27]. Usually, an agreement is established between land managers (service providers) and resource users (buyers) to put this idea into action. CES agreements are commonly entered into voluntarily and without any obligation on the part of beneficiaries or land or resource managers. This payment scheme is therefore an innovative idea to improve ecosystem management and its services through market-based incentive mechanisms.

4.2. Linkages and Coordination among Actors

The study findings revealed that the project has promoted collaboration and synergy between and among key stakeholders in the intervention area. The community groups—the upper and lower watershed cooperatives, the Koga Irrigation dam project office, and two private companies below the dam engaged in fruit and fishing production—have developed strong synergy. According to research study discussants, many government institutions from the regional level down to the community level were mobilized and participated in working together in a coordinated and synergistic manner to improve the performance of the project implementation. These included the Agriculture Bureau, the Water and Energy Bureau, and the Environment and Forest Conservation Authority. The World Resource Institute (WRI), the Abay Basin Administration Office, and Bahir dar University further collaborated for the effective implementation of the project. HELVETAS coordinated the synergy among stakeholders and created forums and platforms for discussion in addition to providing funds and logistics. Many research informants acknowledged that the various stakeholders had built significant collaboration and synergy among themselves during the project implementation period.

4.3. Appraisal of Project Success Indicators

The findings from this study showed that the project brought identifiable impacts on the target community. The project's success indicators—effectiveness, efficiency, relevance, sustainability, and scalability—are discussed in the following paragraphs.

Effectiveness: The study discussants have acknowledged the introduction of a watershed/ecosystem service payment system in the area as a significant achievement. It was claimed that institutionalizing watershed management and establishing watershed cooperatives were effective. However, the respondents further reiterated that the effectiveness of the project was hampered by the short lifespan of the project and the occurrence of local turmoil in the area, which apparently restricted people's movement within and across the watershed. The initiative has not yet succeeded in integrating and harmonizing the combined efforts of the upper and lower watershed cooperatives, according to research informants. Although security challenges in the intervention area impacted the project's budget, timeline, and efficiency, KII reported that all resources were used correctly and efficiently.

In this regard, one of the study informants reiterated his/her narrative using the following expression:

> We invested in an enormous amount of effort into the project. We have created a supportive environment and developed the environmental service payment scheme which was an excellent starting point. It is also impressive that we have begun to apply sustainable natural resource management in the study watershed. Mobilizing the community and raising knowledge about the benefits of ecosystem payment services is critical, and we are thrilled that we have established demand among farmers. (KII, HELEVETAS)

A successful environmental service compensation scheme may take some time to design and implement in a country like Ethiopia, where CES has a weak institutional and legal foundation. Weak governance and an absence of clearly defined property rights may pose a challenge to the effectiveness and implementation of the CES scheme [23,25].

Relevance: The CES intervention, according to KII, was compatible with government development policy and strategies that targeted at improving food security and sustaining high economic growth, as well as promoting sustainable natural resource management and restoring damaged ecosystems. The Koga irrigation dam has a greater potential for irrigation and fishing for the neighboring communities [36,37]. The upper watershed must be effectively preserved, and sedimentation from the surrounding watersheds must be controlled for these potentials to be realized. The project was well aligned with Ethiopia's Climate Resilient Green Economy (CRGE), which places a strong emphasis on preserving natural resources and restoring damaged ecosystems in the country. The project was precisely compatible with the development policies and strategies of the government and effectively matched the needs of the surrounding communities. It was well aligned with the goals, plans, and requirements of the implementing partners. The innovation actions were consistent and well linked with the objectives of mitigating watershed degradation and reducing poverty through an environmental service payment scheme.

Scalability: According to KII, the SUCCESS project has a high chance of scalability. The study discussants revealed that there are many irrigation and hydroelectric dams in Ethiopia with significant socioeconomic and environmental importance. However, most of these dams are vulnerable to changes owing to watershed degradation and siltation from the surrounding catchments. Unless the surrounding watershed ecosystems are conserved, these dams will be in danger of losing their usefulness. The SUCCESS innovation's scalability will be greatly impacted by its successful implementation in the study watershed. Thus, the effective implementation of the SUCCESS project in the study watershed will have a significant impact on its future scalability dimensions. One of the key informants expressed his/her opinion with regard to the scalability of the scheme as follow:

> Yes, the SUCCESS project has significant scalability potential. The country is currently inundated with irrigation and hydropower dams and most of which are found in the northern Ethiopia. Although these dams have high potential to significantly improve the country's socioeconomic situation, improper upper watershed management of these dams will put them at risk. These dams will be vulnerable to siltation, if we do not manage the upper watershed through the CES project. Numerous activities are underway both within and outside the study area, increasing the project's chances of scalability. (KII, Environment and Forest Conservation Authority expert)

If an innovation is proven successful on the spot, its potential scalability to reach more people is high. However, there are two factors that regularly threaten the scalability of innovations [44]: (1) when the pilot projects are established and managed in extremely favorable environments (external support) that do not reflect the reality at scale; and (2) when a lack of conceptual clarity regarding what scaling is frequently leads to a narrow focus on technical replication and reaching numbers of end-user beneficiaries. The scaling up of solutions to sustainability must continuously maintain a balance of incentives among key participants if it is to have long-lasting effects [45].

Sustainability: The study findings revealed that the written bylaws and the linkage established between and among the sector offices and the watershed service cooperatives are an important foundation for the sustainability of the initiative. Notably, the introduction of an ecosystem service payment scheme, a change in community experiences toward watershed degradation and its effects, and attitude changes are all meant to support the sustainability of the project successes. These exhibit the desire of project beneficiaries to keep putting new knowledge into practice. All the training given to the communities and pertinent government line departments is intended to improve long-term sustainability and benchmark the exit strategy. The watershed service cooperatives and communities

have been trained to sustain and manage the scheme for a long time. This was well echoed by one of the KII members as stated below:

> We are working to ensure the project's sustainability and cooperative capacities. We bridge cooperatives knowledge gaps, provide required resources and offices, and develop appropriate organizational structures, rules, and agreements between upper and lower watershed cooperatives. These actions that strengthen all capacities will establish the groundwork for the projects' long-lasting sustainability. (KII, HELEVETAS)

According to Shivairo and Were [46], sustainability of the project results is usually influenced by prevailing social and environmental conditions on the site, such as cost management, political commitment and stability, capacity, and continuity of stakeholders' participation. The community may not be able to sustain the project's success if they have technological, institutional, financial, and governance-related challenges [47]. Systems of environmental service compensation need reliable funding sources to remain functional and sustainable.

5. Global Experiences

It is imperative to consider the diverse arrays of global experiences that impact the planning and implementation of CES success. According to GGGI [47], a stable political and social environment, complementary policies, the presence of a comprehensive legislative framework, the absence of perverse incentives in public policies, and the availability of information are all necessary for PES success. Thus, the following factors should therefore be considered in the future while designing and implementing CES projects in Ethiopia.

The needs and interests of both buyers and sellers of ecosystem services can change over time and apparently influence the success of a CES project; thus, continuous monitoring is required [47]. Examining how payments affect land-use behaviors and landholder intentions and socioeconomic position also requires critical attention [48]; without monitoring these aspects, it is difficult to narrate the CES success. The amount of incentive paid to landholders or resource managers vis-a-vis opportunity cost is also another area of contention that influences CES's success and requires due attention. Many CES schemes are based on a negotiation and participation process that includes both landowners and buyers as well as other key players in the landscapes where the project is being implemented. Buyers and sellers must negotiate a deal they are both comfortable with and ready to follow for CES schemes to truly take off and be implemented [30]. Genuine, open, and broad participation and strong synergy and partnership are required among various stakeholders for CES to succeed. Sustaining institutional infrastructure is also another area of concern that influences CES success.

Rural populations mostly earn their living directly from subsistence agriculture or through the extraction of natural resources in developing countries like Ethiopia. Apparently, some people may become dispossessed because of new project initiatives for CES. Even if target communities become the primary beneficiaries of conservation-related incentives, many others may lose the opportunities and continue to act in the same manner they used to before the introduction of CES [25,30]. The CES project may be a source of disputes; hence, it is necessary to put in place conflict resolution mechanisms. The government should therefore increase transparency and justice, publicize information about watershed governance, and encourage public engagement to foster greater public confidence [29].

Enabling political and social environments are very important for CES success. If there is lack of political support for CES, it is difficult to succeed, as the CES environment may lack the political power needed to ensure the allocation of meaningful financial resources for CES [47]. Ethiopia is a good example of a political environment that requires strong commitment for CES implementation since the country's political environment is not yet conducive.

The biggest obstacle to CES success is the lack of a consistent and ample supply of financing or financing mechanisms [47]. CES projects should facilitate and support

mechanisms that will make it easier to acquire sustainable financing, including a variety of matching funds from corporate, public, and international entities. The private sector represents a sizable potential financing source for addressing the conservation-financing gap. New, creative, and expanding ecosystem sources of funding exist that, if properly exploited, might benefit both the environment and business profits, depending on the type of ecosystem services planned for transaction. For example, Ethiopia currently relies primarily on man-made dams to produce hydropower for its energy needs. These dams will not last long if they are not shielded from the sedimentation caused by the degradation of nearby watersheds. However, the life of the dams and their energy sources would be greatly extended if these energy-generating firms entered into CES agreements with nearby communities and other agencies to manage the watersheds in the surroundings. The same holds true for irrigation and urban water supply dams in different parts of the country.

Building capacity for CES design, implementation, management, enforcement, and evaluation are also critical [48]. CES requires a supportive institutional and legislative structure that enables payments to be sent and received, defends buyers' and sellers' rights, and permits monitoring. The importance of institutional, organizational, and technological competence is frequently cited as another essential area that influences CES success [25,30]. Thus, serious scrutiny is required from technical, governance, and legal framework points of view in future consideration. This entails identifying regulations, institutions or practices that impede CES or that might be necessary for its proper function, either altering the program or arguing for legislative reform as necessary.

Payments for the ecosystem services initiative alone might not be sufficient to build the resilience of the community and ecosystem against environmental degradation, climate change, or both. As a result, livelihood diversification options must therefore be complemented or considered in the intervention area if CES is to succeed. In recent years, there has been an increase in support for payments for watershed conservation, but there are concerns that not enough time has been given to fully analyze these systems [23,24]. CES schemes have occasionally been demonstrated to not be the most economical method for achieving watershed management objectives and, hence, require continuous surveillance. Technically, the worth of environmental goods and services to both land managers (service suppliers) and users (buyers) must be well defined for systems of payments for environmental services to function. It is necessary to analyze the level of community support for environmental benefits and to identify and agree upon the most suitable payment modality. Market participants must know the value and quantity of the services being exchanged. Participants must be given the chance to bargain for their compensation. Clear ownership and property rights must be established for services and commodities.

6. Challenges and Lessons Learned

Lack of adequate CES legal and institutional frameworks in the country or in the intervention area, lack of mechanisms to enforce the downstream communities to pay incentives for the upper-stream communities engaged in ecosystem service management, political instability in the region, and absence of the desired institutional capacity and logistics at the district and community levels were mentioned as critical challenges that limited the implementation and sustainability of the innovation action in the watershed.

Building the capacity of stakeholders, intense follow-up and involvement of stakeholders during designing and implementation, the idea of payments for ecosystem services, as well as the necessity of improving knowledge of the different service types and recognizing the value of each service, a financial agreement or arrangement between community groups (upstream and downstream) for the adoption of a payment system for environmental services, continuous technical support to watershed committees and cooperatives, and the importance of creating strong synergy, collaboration, participation, and partnership among various stakeholders operating in the landscape or across sectors were mentioned as an important lessons learned during the implementation of the project.

7. Conclusions

This study assessed the performance of the SUCCESS project implemented in the Koga watershed of Northern Ethiopia. The study findings revealed that the project has introduced an innovative system that has enabled linkage between upstream and downstream cooperatives through the CES scheme to improve watershed management and poverty alleviation. The project's beneficiaries and implementers were pleased with the introduction of payments for watershed services as a scheme in the area. The scheme is praised for its potential mechanism in fighting against dam siltation and watershed degradation in the area and beyond, although this has not yet been realized because of time and security constraints in the intervention area. The CES cooperatives have still several challenges such as limited financial and human resources to run the scheme. Understanding the concerns of these cooperatives and providing appropriate support on a continuous basis is critical.

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